



Federal Trade Commission Report

"TAR", NICOTINE AND CARBON MONOXIDE OF THE SMOKE OF 272 VARIETIES OF DOMESTIC CIGARETTES

DECEMBER 1988

PM3000878903

**Report of Tar, Nicotine and Carbon Monoxide of the
Smoke of 272 Varieties of Domestic
Cigarettes for the Year 1988**

This report contains data on the tar, nicotine and carbon monoxide content of 272 varieties of cigarettes manufactured and sold in the United States. The test results were submitted to the Federal Trade Commission (FTC) by the six largest cigarette manufacturers in the United States. These companies are the following: American Brands, Inc.; Brown & Williamson Tobacco Corp.; Liggett Group, Inc.; Lorillard, a Division of Loew's Theatre, Inc.; Philip Morris, Inc.; and R. J. Reynolds Tobacco Company, Inc.

These are the first test results reported by the FTC using a procedure under which the Tobacco Institute Testing Laboratory (TITL), a private laboratory operated by the cigarette industry, conducted tar, nicotine and carbon monoxide testing for these 272 varieties.¹ The methodology, processes and procedures that the companies and TITL employ are identical to those the Commission

¹ The Commission determined in early 1987 to close its laboratory. The Commission found that closing the laboratory was necessary for several reasons. First, the operation of a highly complex testing program, even one limited to tar, nicotine and carbon monoxide, was incompatible with the expertise of the agency. Secondly, the cost of the laboratory was significant, and the Commission would have had to commit significant additional funds in order to continue the program. Finally, the Commission was persuaded that the same information could be obtained from other sources, and other means were available to verify the accuracy of industry testing results.

has followed. Harold Pillsbury, the former director of the FTC laboratory and currently a contractor to the Commission, was given unrestricted access to the TITL laboratory for the purpose of reviewing the testing methodology and protocols used by the TITL and for monitoring the actual testing process.

Cigarette smoke from 272 varieties was tested by TITL. This laboratory provided the results to the respective cigarette companies. The companies provided the data generated by TITL regarding their own brands to the FTC in response to requests issued by the Commission requiring submission of this information.

The cigarettes were tested using the Cambridge Method. This methodology has been approved by the FTC and used as the standard for cigarette testing since 1966. The testing was subjected to the conditions prescribed by the FTC in Federal Register, Volume 32, Number 147, Page 11178, dated August 1, 1967. With regard to the testing of carbon monoxide content, the conditions are specified in Federal Register, Volume 45, Number 134, Page 46483, dated July 10, 1980. The conditions prescribed in the FTC's 1967 announcement are the following:

1. Smoke cigarettes to a 23mm. butt length, or to the length of the filter and overwrap plus 3mm. if in excess of 23mm.,
2. Base results on a test of 100 cigarettes per brand, or type,
3. Cigarettes to be tested will be selected on a random basis, as opposed to "weight selection,"
4. Determine particulate matter on a "dry" basis employing the gas chromatography method published by C. H. Sloan and B. J. Sublett in Tobacco Science 9, page 70, 1965, as modified by F. J. Schultz' and A. W. Spears' report published in Tobacco Vol. 162, No. 24, page 32, dated June 17, 1966, to determine the moisture content,
5. Determine and report the "tar" content after subtracting moisture and alkaloids (as nicotine) from particulate matter,

6. Report tar content to the nearest whole milligram and nicotine content to the nearest 1/10 milligram.
(32 Fed. Reg. 11178 (1967)).

The 1980 FTC announcement contained specifications regarding a new testing methodology to be used in determining the carbon monoxide (CO) and nicotine content of cigarettes. These specifications are the following:

1. Determine CO concentration using a 20-port sequential smoking machine described by H. C. Pillsbury and G. Merfeld at the 32nd Tobacco Chemists Research Conference, October, 1978,
2. The concentration of CO will be reported as milligrams per cigarette,
3. The present method for "tar" and nicotine determination will be modified to use the method described in an article entitled, "Gas Chromatographic Determination of Nicotine Contained on Cambridge Filter Pads," by John R. Wagner et al., as presented at the annual meeting of the Association of Official Analytical Chemists, October 1978.
(45 Fed. Reg. 46483 (1980)).

TITL reported, and our contractor confirmed, that the tested cigarette samples were obtained by an independent company under contract to TITL. Under its contract with TITL, this company was to purchase two packages of every variety of cigarettes manufactured and distributed in 50 geographical locations throughout the United States. If not all varieties were available in every location, one or more packages of cigarettes were purchased in the areas where the respective varieties were available. This procedure of selecting cigarettes for testing replicates the one used by the FTC. Cigarettes utilized in the test represented 272 varieties of the cigarettes sold in the U.S. at the time of the purchase.

The tar and carbon monoxide figures are rounded to the nearest milligram (mg.). Those figures with 0.5 mg. or greater are rounded up while, those with 0.4 mg. or less are rounded down. The nicotine figures are rounded to the nearest tenth of a milligram. Those with 0.05 mg. or greater are rounded up; those with 0.04 mg. or less are rounded down.

Cigarette brands with assay results of tar and carbon monoxide below 0.5 mg. per cigarette variety and of nicotine below 0.05 mg. are recorded in the table with an asterisk(*). The table does not differentiate, nor are actual tar ratings provided for these cigarettes, because the currently approved

testing methodology is not sufficiently sensitive to report these components at lower levels.

The following varieties are the eleven lowest in tar content:²

1.	Carlton	KFHP	*
2.	Now	KFHP.	*
3.	Carlton	KFSP.	1
4.	Carlton	KFMSP.	1
5.	Carlton 100's	FHP.	1
6.	Carlton 100's	FMHP.	1
7.	Now	KFSP	1
8.	Now	KFMSP	1
9.	Now 100's	FSP2
10.	Carlton 100's	FSP	3
11.	Now 100's	KFMSP	3

* Asterisk indicates that the variety tested below 0.5 mg. of tar, but the exact level cannot be determined, because the testing methodology is not sufficiently sensitive to determine the exact level of tar.

² K - King Size, R - regular, F - filter, NF - non-filter, M - menthol, HP - hardpack, SP - softpack.

In descending order, those ranking the ten highest in tar content are the following:

1.	Old Gold Straights	KNFSP.	27
2.	Philip Morris Commander	KNFSP.	27
3.	Chesterfield	KNFSP.	25
4.	Herbert Tareyton	KNFSP.	25
5.	Players	RNFHP.	25
6.	English Ovals	KNFHP.	24
7.	Lucky Strike	RNFSP.	24
8.	Pall Mall	KNFSP.	24
9.	Pall Mall 25's	KNFSP.	24
10.	Raleigh	KNFSP.	24

On April 13, 1983, the Commission announced it had determined that its then testing methodology for tar, nicotine and carbon monoxide did not measure accurately Brown & Williamson's Barclay cigarettes. The methodology had understated the measured deliveries of these varieties of cigarettes. For this reason, the Commission announced that until it adopted a new testing methodology that accurately measured Barclay cigarettes, future FTC reports on tar, nicotine and carbon monoxide would not include tests results for Barclay cigarettes. The Commission also found that there was a significant likelihood that the same problem, namely an inaccurate reporting of the tar, nicotine and carbon monoxide delivery existed in two other Brown & Williamson

varieties -- Kool Ultra and Kool Ultra 100's. However, the Commission did not reach any conclusion whether Kool Ultra and Kool Ultra 100's were ranked inappropriately.

On July 25, 1986, the Commission informed Brown & Williamson that as a result of a review of data presented by Brown & Williamson regarding a tar and nicotine rating for two varieties of Barclay cigarettes with a new filter, the Commission would authorize, under certain conditions, the following legends for advertising purposes:

1. For Barclay King Size:
3 mg. "tar," .2 mg. nicotine
av. per cigarette as authorized by FTC;
2. For Barclay 100's:
5 mg. "tar," .4 mg. nicotine
av. per cigarette as authorized by FTC.

Brown & Williamson also has agreed to provide the FTC with data, in the near future, regarding tar and nicotine ratings to be used in advertising for Kool Ultra and Kool Ultra 100's. Until Brown & Williamson presents data to the Commission regarding tar and nicotine ratings for Kool Ultra and Kool Ultra 100's, it has been agreed that the ratings for these two

varieties will not be included in this report nor in future FTC publications of the tar, nicotine and carbon monoxide of domestic cigarettes.